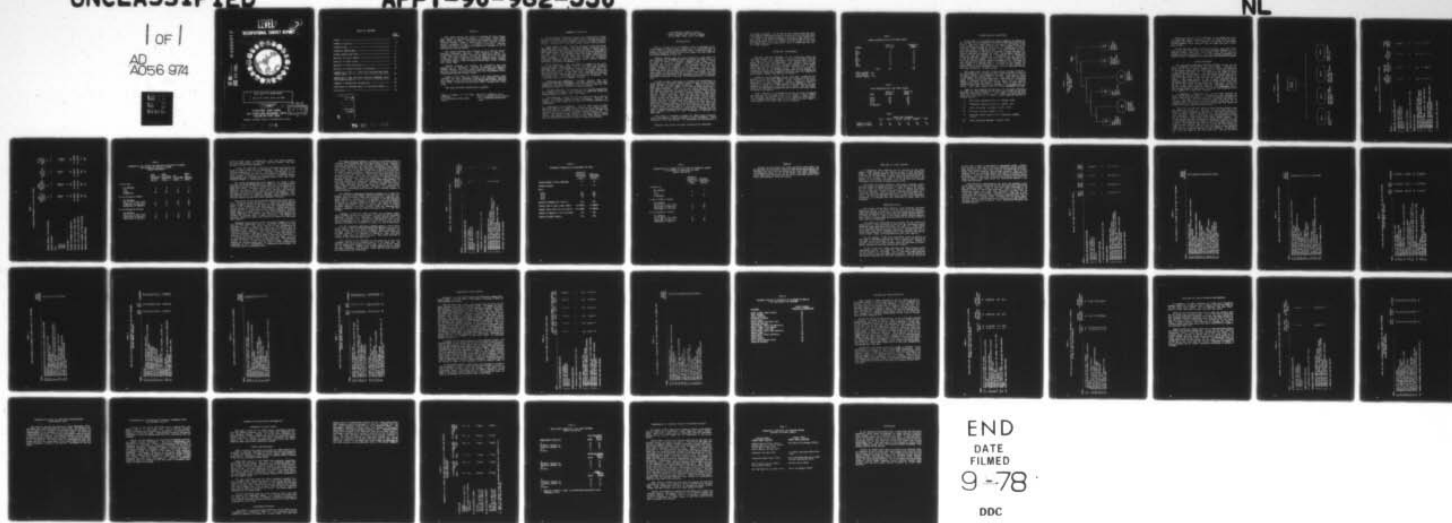


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9 OCCUPATIONAL SURVEY REPORT  
(Final)

10 Frederick B. Bowers, Jr.



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AFSCs 98230, 98250, 98270, and 98290.

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## PREFACE

This report presents the results of a detailed Air Force Occupational Survey of the Dental Laboratory career ladder (AFSCs 98230, 98250, 98270, and 98290). The project was directed by USAF Program Technical Training, Volume 2, dated October 1977. Authority for conducting occupational surveys is contained in AFR 35-2. Computer outputs from which this report was produced are available for use by operating and training officials.

The survey instrument was developed by 1st Lt Rita M. Snyder, Inventory Development Specialist. Capt Frederick B. Bower, Jr., Occupational Survey Analyst, analyzed the data and wrote the final report. This report has been reviewed and approved by Lt Col Jimmy L. Mitchell, Chief, Airman Career Ladders Analysis Section, Occupational Survey Branch, USAF Occupational Measurement Center, Lackland AFB, Texas, 78236.

Computer programs for analyzing the occupational data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Copies of this report are available to air staff sections, major commands, and other interested training and management personnel upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Lackland AFB, Texas 78236.

This report has been reviewed and is approved.

JAMES A. TURNER, JR., Col, USAF  
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## SUMMARY OF RESULTS

1. Survey Coverage: Inventory booklets were administered to Dental Laboratory personnel during the period January through April 1978. Survey results are based on responses from 532 of the 664 incumbents assigned, or 80 percent of the total assigned career ladder population.
2. Career Ladder Structure: Six major groupings of jobs were identified within the career ladder. The largest group (58 percent of the sample) was that of Base Dental Laboratory personnel. These members were involved with the fabrication and repair of dental prostheses at base labs. Other groups included Crown and Bridge Fabricators who worked in both area and base dental labs, Removable Partial Dentures (RPD) Fabricators who were found only at area labs, Orthodontic Appliances Specialists who were primarily found overseas, Porcelain Fabricators, and Dental Lab Managers.
3. DAFSC Differences: Jobs performed by members of the career ladder were fairly homogeneous. The 3- and 5-skill level incumbents performed similar general laboratory tasks, although 5-skill level members were more involved with the fabrication of crowns, inlays, and fixed partial dentures. At the 7-skill level, respondents also perform supervisory tasks, although only 30 percent of their job time was spent on related duties. Most were still performing as technicians. The 9-skill level incumbents were primarily managers.
4. CONUS/Overseas Comparison: Personnel overseas were more involved in fabricating and repairing orthodontic appliances. Other than orthodontics, only minor differences were noted in the tasks and jobs performed by 5-skill level CONUS and overseas members.
5. AFR 39-1 Evaluation: The current AFR 39-1 Specialty Descriptions were found to be complete and accurately portrayed the duties and responsibilities of personnel in the career ladder.
6. STS Evaluation: Overall, the STS was found to be up to date and complete in providing general training requirements. However, the inclusion of an item relating to the repair of orthodontic appliances was recommended.
7. Comparison to Previous Survey: Overall, there were no major differences between the results of the current and the previous survey. The basic jobs have remained the same over the years, although some differences were noted in the Removable Partial Dentures jobs. In addition, the current survey identified a Porcelain Fabricator group that was not identified in the previous survey. Both surveys showed high job interest and perceived utilization of talents and training.

OCCUPATIONAL SURVEY REPORT  
DENTAL LABORATORY CAREER LADDER  
(AFSCs 98230, 98250, 98270, and 98290)

INTRODUCTION

This is a report of an occupational survey of personnel in the Dental Laboratory career ladder completed by the Occupational Survey Branch, USAF Occupational Measurement Center, during June 1978. A previous occupational survey of this career ladder has been conducted and results published in April 1974.

Personnel usually enter the Dental Laboratory career ladder by first attending the J3ABR98230 Dental Laboratory Specialist Course at the School of Health Care Sciences, Sheppard AFB, Texas. These personnel may be either "pipeline" students from basic training or retrainees from other specialties. Upon completion of the 24 week course, graduates are awarded the 3-skill level. They are then assigned to either one of eight area dental laboratories or to one of the USAF base dental laboratories located worldwide. Currently the 982X0 career ladder is relatively balanced in terms of year groups, and with only slightly more personnel in the paygrades of E-6 and E-7 than are authorized as reported in the USAF Retraining Advisory of 14 December 1977.

In order to better understand the functions and responsibilities of dental laboratory personnel, mention should be made of the organizational structure of USAF dental laboratories. Airmen in this career ladder may be assigned to either of two types of dental laboratories; a base dental laboratory (BDL) or an area dental laboratory (ADL). Base labs are responsible for supporting the associated dental facilities with the fabrication and repairing of complete dentures, fixed partial dentures, crowns, and inlays. They may also repair removable partial dentures. ADLs support base dental labs within their area of responsibility through the fabrication of removable partial denture frames. Because the eight ADLs possess approximately 32 percent of this career ladder's personnel strength, they also support the base labs in the fabrication of complete dentures, fixed partial dentures and other fixed bridge work when demand exceeds the local resources to produce them. In other words, ADLs function as a centralized facility for the fabrication of removable partial denture frames and as a clearing house for other prosthetic fabrication or repair backlogged at associated base dental labs.

This report is intended to examine the 982X0 Dental Laboratory career ladder based on tasks performed by survey respondents. Topics discussed in this report include: (1) development and administration of

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the survey instrument; (2) the job structure found within the career ladder and the relationship to skill level and experience level groupings; (3) comparisons of the job structure with current career ladder documents such as the AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS); (4) comparison of the results of this study with results from the previous survey; and (5) background data relative to job satisfaction.

### INVENTORY DEVELOPMENT

The data collection instrument for this occupational survey was USAF Job Inventory AFPT 90-982-330. The survey instrument from the 1974 study of this career ladder served as the starting point for development of the new task inventory. The previous task list was expanded and refined through a thorough research of career ladder publications and directives, and personal interviews with 15 subject matter specialists at five different bases. This process resulted in a revised job inventory of 254 tasks grouped under 12 duty headings and a background section that requested information about the respondents such as grade, TAFMS, duty title and job interest.

During the period January through April 1978, consolidated base personnel offices worldwide administered the inventories to job incumbents serving in the career ladder. Table 1 reflects the percentage distribution, by major command, of personnel assigned a DAFSC of 982X0 as of October 1977. Also reflected is the distribution, by major command, of incumbents in the final survey sample. The 532 respondents in the final sample represent 80 percent of the total career ladder population of 664 members.

Table 2 presents the percentage distribution by DAFSC of assigned personnel and the comparison to the survey sample. Table 3 reflects the percentage distribution of the survey sample by AFMS groups. These sampling distributions tend to verify that the survey sample is representative of the overall career ladder population.



TABLE 1

## COMMAND REPRESENTATION IN THE SURVEY SAMPLE

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
AAC	3	3
USAFE	11	12
AFSC	6	6
ATC	22	15
MAC	10	11
PACAF	8	8
SAC	26	27
TAC	8	9
OTHER	6	9
TOTAL	100	100

TOTAL ASSIGNED - 664

TOTAL SAMPLED - 532

PERCENT SAMPLED - 80%

TABLE 2

## DAFSC REPRESENTATION OF THE SURVEY SAMPLE

<u>DAFSC</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
98230	12%	13%
98250	67%	61%
98270	19%	23%
89290	2%	2%
NO RESPONSE	-	1%

TABLE 3

	<u>MONTHS TIME IN SERVICE</u>					
	<u>1-48</u>	<u>49-96</u>	<u>97-144</u>	<u>145-192</u>	<u>193-240</u>	<u>241+</u>
NUMBER IN SAMPLE	241	96	50	41	83	21
PERCENT OF SAMPLE	45%	18%	9%	8%	16%	4%

## CAREER LADDER STRUCTURE

A key aspect of the occupational survey program is to examine the job structure of career ladders on the basis of what people are actually doing in the field, rather than on the basis of how official career ladder documents say they are structured. This analysis of actual job structure is made possible by the use of the Comprehensive Occupational Data Analysis Programs (CODAP). By using CODAP, job functions are identified on the basis of similarity in tasks performed and relative time spent performing the tasks. To determine relative time spent for each task checked by a respondent, all an incumbent's ratings are assumed to account for 100 percent of his or her time spent on the job and are summed. Each task rating is then divided by the total task responses and the quotient multiplied by 100. By using the job structure as a starting point, it is possible to first describe the career ladder as it presently exists, and then, in turn, evaluate the pertinent career ladder documents, such as AFR 39-1 Specialty Descriptions and the Specialty Training Standard.

The career ladder structure analysis process consists of determining the functional job structure of career ladder personnel in terms of job types, clusters, and independent job types. A job type is a group of individuals who perform many of the same tasks and also spend similar amounts of time performing them. When there is a substantial degree of similarity between different job types, they are grouped together and labeled as clusters. Finally, there are often cases of specialized job types that are too dissimilar to be grouped into any cluster. These fairly unique groups are labeled independent job types.

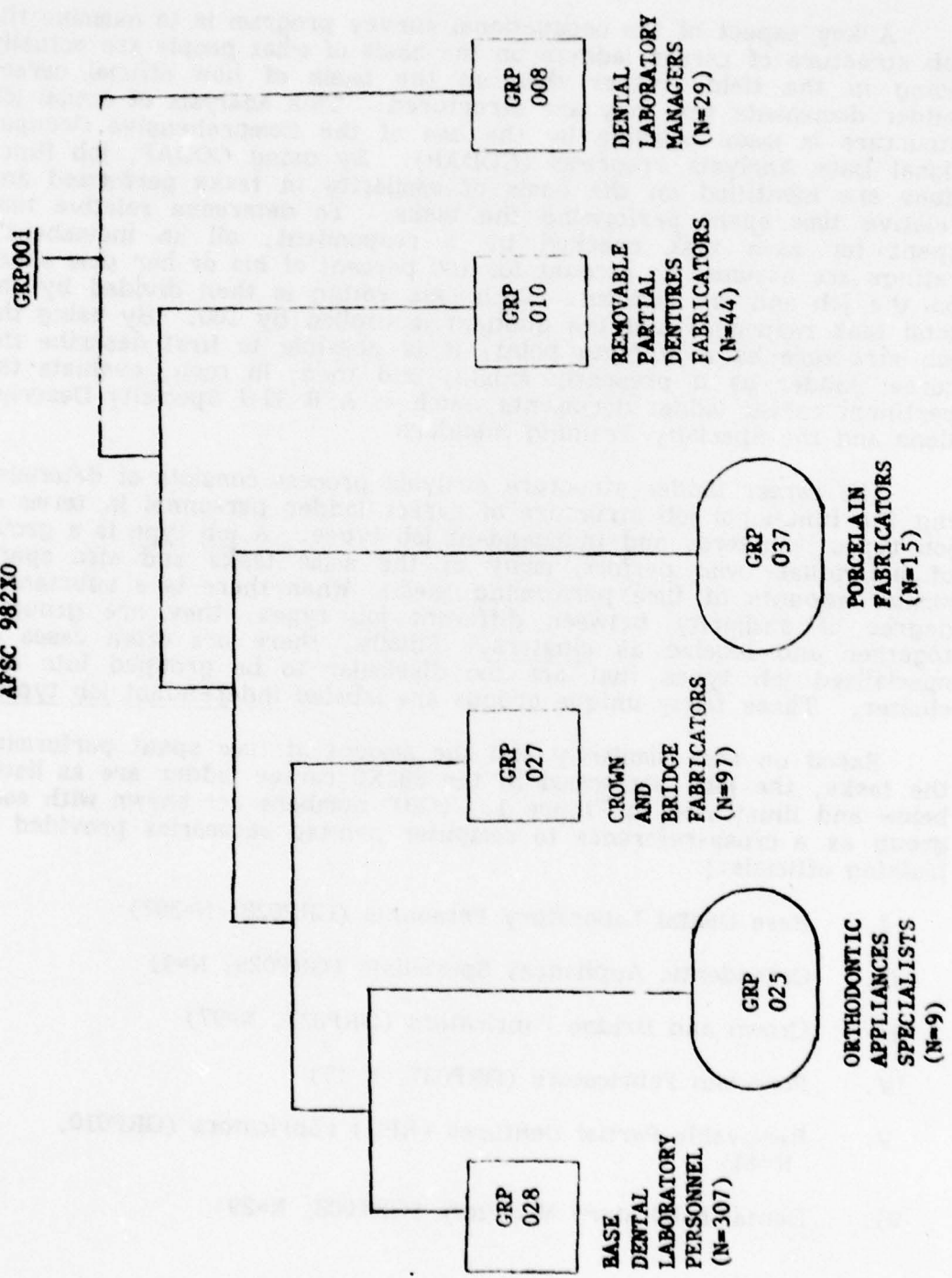
Based on task similarity and the amount of time spent performing the tasks, the jobs performed in the 982X0 career ladder are as listed below and illustrated in Figure 1. (GRP numbers are shown with each group as a cross-reference to computer printed summaries provided to training officials.)

- I. Base Dental Laboratory Personnel (GRP028, N=307)
- II. Orthodontic Appliances Specialists (GRP025, N=9)
- III. Crown and Bridge Fabricators (GRP027, N=97)
- IV. Porcelain Fabricators (GRP037, N=15)
- V. Removable Partial Dentures (RPD) Fabricators (GRP010, N=44)
- VI. Dental Laboratory Managers (GRP008, N=29)



FIGURE 1

CAREER LADDER STRUCTURE  
DENTAL LABORATORY  
AFSC 982X0



Ninety-four percent of the respondents in the sample were found to perform jobs roughly equivalent to those described in the six major groupings listed above. The remaining six percent of the sample included members whose jobs were not associated with any of these major groups.

Because the Base Dental Laboratory Personnel, Crown and Bridge Fabricators, RPD Fabricators, and Dental Laboratory Managers are the principal clusters within this career ladder, they will be discussed together for ease of presentation. The two remaining independent job types will then be displayed on separate tables and discussed separately.

#### Group Descriptions

The Base Dental Laboratory Personnel (GRP028) are by far the largest identifiable cluster within the career ladder. Comprising 58 percent of the survey sample, members of this group are responsible for performing those tasks and duties relative to the overall mission of a base dental laboratory; i.e., the fabrication and repair of dental prostheses (with the exception of removable partial dentures fabrication). Performing an average of 90 tasks, this group spends relatively 80 percent of their time in four technical duty areas as illustrated in Table 4. The largest percent of time is spent performing general laboratory tasks (49 percent). Nearly two-thirds of this group hold the DAFSC 98250, while 21 percent hold the 7-skill level. Forty-seven percent of the group indicated they were supervisors but only 10 percent of their time is spent on supervisory and management duties. The average TAFMS for this group is 85 months, but 43 percent of the group members are in their first enlistment.

A comparison of background data with the other principal job types can be found in Table 5. A comparison of the expressed job interest and perceived utilization of talents and training is presented in Table 6. As shown, the job satisfaction levels for this group are extremely high, with 85 percent of the members rating their jobs as interesting and an even higher percentage feeling that their talents and training are being utilized fairly well or better.

There were four job types identified within the Base Dental Laboratory group (see Figure 2). The first was that of Base Dental Lab NCOICs. Although assigned to positions of supervisory responsibility, these individuals spend 71 percent of their time performing technical tasks and duties. (This trend of supervisors functioning as technicians will be discussed in more detail in the DAFSC analysis section.) The second job type was that of experienced personnel who spent more time in the actual fabrication and repair of fixed dental work and complete dentures. The third job type consisted of first enlistment airmen with a lower average skill level than that possessed by the other sub-groups. Eighty percent of their time was spent performing general laboratory tasks and fabricating and repairing complete dentures. Dental laboratory instructors made up the fourth job type. Because the dental

FIGURE 2

BASE DENTAL LABORATORY PERSONNEL

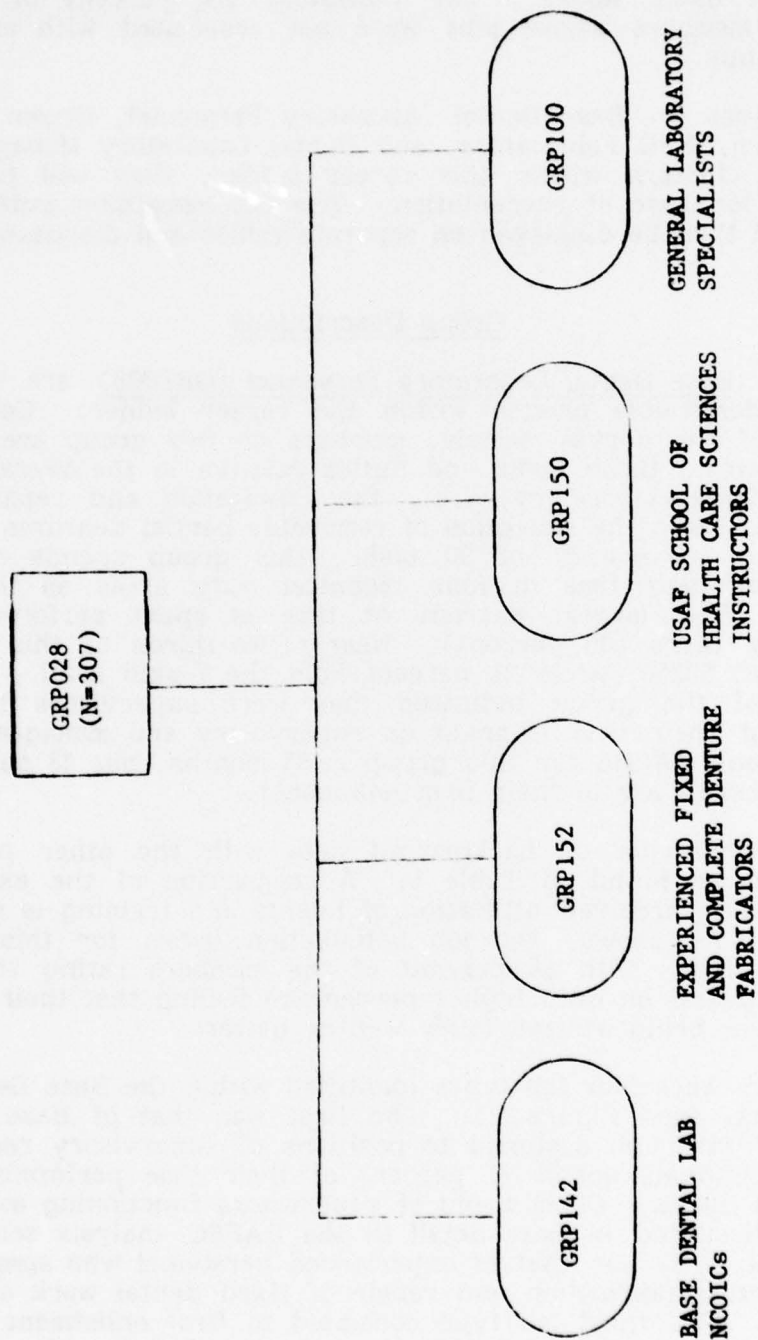


TABLE 4

PERCENT TIME SPENT ON DUTIES BY PRINCIPAL CLUSTERS

DUTIES	BASE DENTAL LAB PERSONNEL (N=307)	CROWN AND BRIDGE FABRICATORS (N=97)	RPD FABRICATORS (N=44)	DENTAL LAB MANAGERS (N=29)
<u>SUPERVISORY AND MANAGEMENT FUNCTIONS</u>				
A ORGANIZING AND PLANNING	2	4	3	17
B DIRECTING AND IMPLEMENTING	4	6	6	25
C INSPECTING AND EVALUATING	2	4	2	19
D TRAINING	2	3	3	13
<u>ADMINISTRATIVE FUNCTIONS</u>				
E PERFORMING ADMINISTRATIVE AND SUPPLY TASKS	3	4	2	12
<u>TECHNICAL FUNCTIONS</u>				
F PERFORMING GENERAL LABORATORY TASKS	49	22	51	8
G FABRICATING AND REPAIRING COMPLETE DENTURES	13	1	*	1
H FABRICATING AND REPAIRING REMOVABLE PARTIAL DENTURES (RPDs)	9	1	31	3
I FABRICATING CROWNS, INLAYS, AND FIXED PARTIAL DENTURES	9	31	*	1
J FABRICATING PORCELAIN PRODUCTS	2	23	1	*
K FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	5	1	1	1
L FABRICATING SPECIAL PROSTHESES	*	*	*	*

\* INDICATES LESS THAN ONE PERCENT



TABLE 5

## BACKGROUND INFORMATION BY PRINCIPAL CLUSTERS

	BASE DENTAL LAB PERSONNEL (N=307)	CROWN AND BRIDGE FABRICATORS (N=97)	RPD FABRICATORS (N=44)	DENTAL LAB MANAGERS (N=29)
AVERAGE NUMBER OF TASKS PERFORMED	90	72	24	58
AVERAGE PAYGRADE	4.2	4.8	3.8	6.8
DAFSC				
98230	12%	8%	23%	-
98250	66%	55%	68%	14%
98270	21%	33%	9%	58%
98290	-	3%	-	28%
NO RESPONSE	1%	1%	-	-
PERCENT OF MEMBERS WHO SUPERVISE	47%	60%	32%	90%
AVERAGE TIME IN 982X0 CAREER LADDER	66 MONTHS	106 MONTHS	44 MONTHS	193 MONTHS
AVERAGE TOTAL ACTIVE MILITARY SERVICE	85 MONTHS	118 MONTHS	51 MONTHS	221 MONTHS
PERCENT OF MEMBERS IN FIRST ENLISTMENT	43%	28%	68%	3%
PERCENT ASSIGNED OVERSEAS	24%	23%	32%	38%



TABLE 6

EXPRESSION OF JOB INTEREST AND PERCEIVED UTILIZATION OF TALENTS  
AND TRAINING BY PRINCIPAL CLUSTERS  
(PERCENT RESPONDING)

	BASE DENTAL LAB PERSONNEL (N=307)	CROWN AND BRIDGE FABRICATORS (N=97)	RPD FABRICATORS (N=44)	DENTAL LAB MANAGERS (N=29)
I FIND MY JOB:				
NOT REPORTED	2	4	-	7
DULL	3	1	7	3
SO-SO	7	6	14	7
INTERESTING	88	89	79	83
MY JOB UTILIZES MY TALENTS:				
NOT REPORTED	-	2	-	3
NOT AT ALL TO VERY LITTLE	7	4	14	21
FAIRLY WELL TO VERY WELL	66	47	73	55
EXCELLENTLY TO PERFECTLY	27	47	13	21
MY JOB UTILIZES MY TRAINING:				
NOT REPORTED	1	1	-	3
NOT AT ALL TO VERY LITTLE	7	6	7	21
FAIRLY WELL TO VERY WELL	63	51	75	41
EXCELLENTLY TO PERFECTLY	29	42	18	35

laboratory basic course is demonstration rather than lecture oriented, the instructors perform the same basic tasks they would if they were assigned to a base dental laboratory.

Overall, the similarities in the tasks performed by these four job types are much greater than the differences. Thus, they will not be analyzed separately in this report. Essentially, all personnel in this cluster are performing the same basic base laboratory functions such as final finishing or polishing of acrylic products, performing general housekeeping tasks, pouring and trimming master casts, and curing fractured, broken, or relined dentures.

The Crown and Bridge Fabricators (GRP027) are found in both area and base dental laboratories and are different from the Base Dental Laboratory Personnel in that they spend more time in the fabrication of fixed dental work. Fifty-three percent of their time is spent in the fabrication of crowns, inlays, fixed partial dentures, and porcelain products. Only two percent of their time is spent fabricating or repairing complete dentures or repairing removable partial dentures. Considerably less time is also spent on performing general laboratory tasks than was reported by the Base Dental Laboratory Personnel.

Sixty percent of this group's members indicated they were supervisors. Thirty-six percent are either 7- or 9-skill level airmen and the group averages 17 percent of time spent on supervisory and management duties. Only 28 percent of this group are first enlistment personnel. With an average of 72 inventory tasks performed, representative tasks include wax-up or carving patterns for crowns; finishing or polishing dental alloys for crowns, inlays, or fixed partial dentures; investing bridge components for soldering; and waxing or carving substructure patterns for porcelain fused to metal restorations. Job interest and perceived utilization of talents and training are highest for this group (See Table 6).

Removable Partial Dentures (RPD) Fabricators (GRP010) are found only at dental laboratories and are responsible exclusively for the fabrication of RPDs. They spend virtually no time performing those technical functions associated with base dental laboratories such as fabricating crowns, inlays, and fixed partial dentures, or fabricating or repairing complete dentures. Only nine percent of this group are 7-skill level personnel, with 68 percent being in their first enlistment. Although 79 percent of the group members find their job interesting, it is the lowest job interest level of all the survey's job types. It is also the most specialized job in terms of tasks performed. RPD fabricators perform an average of only 24 job inventory tasks. They include finishing or polishing dental alloys for RPDs, Ti-lectro polishing metal frameworks of RPDs, sandblasting or shellblasting metal castings, and performing general housekeeping tasks.

The Dental Laboratory Managers (GRP008) are individuals placed in a position of responsibility that has removed them from any requirement to spend large amounts of time performing technical tasks. Located at area dental laboratories and large base laboratories, these members spend 74 percent of their time performing in supervisory and management duties. Only six percent of their time is spent in the fabrication or repair of dental prostheses. Eighty-six percent of the group hold a 7- or 9-skill level and 90 percent indicated they supervised other dental laboratory personnel. Their duty titles range from superintendents of an area dental laboratory, instructor supervisors, to NCOICs of dental laboratory sections. Job interest was high among group members but perceived utilization of talents and training were somewhat lower in comparison to the other job groups. This group averages 58 job inventory tasks performed, mostly supervisory in nature, and include; writing APRs, interpreting policies, directives, or procedures for subordinates, determining work priorities, and counseling trainees on training progress.

The Orthodontic Appliances Specialists (GRP025) are a small independent job type where members spend 76 percent of their time performing general laboratory tasks and fabricating and repairing orthodontic appliances. Because of the requirement to provide dependent dental care in overseas locations, the majority of the groups members (67 percent) are assigned outside the CONUS. Two others are assigned to Wilford Hall Medical Center at Lackland AFB, Texas, to support residence training of Air Force dentists, while the remaining group member is assigned to the base dental laboratory at the U. S. Air Force Academy.

Averaging 47 inventory tasks performed, the Orthodontic Appliances Specialist performs such functions as bend wire for orthodontic appliances, fabricate space maintainers, fabricate lingual arches, and pour and trim master casts. The percent time spent on duties, background information and job satisfaction levels for this group and the Porcelain Fabricators are presented in Tables 7, 8, and 9 respectively.

The job of Porcelain Fabricators (GRP037) appears to have evolved in this career ladder as dental technology has improved and the desire among patients for more natural appearing dental prostheses has increased. Sixty-three percent of this group's time is spent fabricating porcelain products. An additional 15 percent is spent fabricating crowns, inlays, and fixed partial dentures. This group performs an average of only 28 job inventory tasks.

Sixty percent of the individuals in this group are in their first enlistment, with 93 percent holding either a 3- or 5-skill level. Job interest among group members is quite high, with 93 percent finding the job interesting. Common tasks include applying body or incisal porcelain, contouring fired porcelain, firing body or incisal porcelain, and staining porcelain restorations.



TABLE 7  
PERCENT TIME SPENT ON DUTIES BY INDEPENDENT JOB TYPES

DUTIES	ORTHODONTIC APPLIANCES SPECIALISTS (N=9)	PORCELAIN FABRICATORS (N=15)
<u>SUPERVISORY AND MANAGEMENT FUNCTIONS</u>		
A ORGANIZING AND PLANNING	2	2
B DIRECTING AND IMPLEMENTING	4	4
C INSPECTING AND EVALUATING	*	2
D TRAINING	2	2
<u>ADMINISTRATIVE FUNCTIONS</u>		
E PERFORMING ADMINISTRATIVE AND SUPPLY TASKS	2	1
<u>TECHNICAL FUNCTIONS</u>		
F PERFORMING GENERAL LABORATORY TASKS	43	11
G FABRICATING AND REPAIRING COMPLETE DENTURES	4	-
H FABRICATING AND REPAIRING REMOVABLE PARTIAL DENTURES (RPDs)	5	-
I FABRICATING CROWNS, INLAYS, AND FIXED PARTIAL DENTURES	3	15
J FABRICATING PORCELAIN PRODUCTS	1	63
K FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	33	-
L FABRICATING SPECIAL PROSTHESES	1	-

\* INDICATES LESS THAN ONE PERCENT

TABLE 8  
BACKGROUND INFORMATION BY INDEPENDENT JOB TYPES

	ORTHODONTIC APPLIANCES SPECIALISTS (N=9)	PORCELAIN FABRICATORS (N=15)
AVERAGE NUMBER OF TASKS PERFORMED	47	28
AVERAGE PAYGRADE	4.3	3.8
DAFSC		
98230	33%	33%
98250	56%	60%
98270	11%	7%
98290	-	-
PERCENT OF MEMBERS WHO SUPERVISE	22%	40%
AVERAGE TIME IN 982X0 CAREER LADDER	88 MONTHS	47 MONTHS
AVERAGE TOTAL ACTIVE MILITARY SERVICE	109 MONTHS	55 MONTHS
PERCENT OF MEMBERS IN FIRST ENLISTMENT	33%	60%
PERCENT ASSIGNED OVERSEAS	67%	20%



TABLE 9

EXPRESSION OF JOB INTEREST AND PERCEIVED UTILIZATION OF TALENTS  
AND TRAINING BY INDEPENDENT JOB TYPES  
(PERCENT RESPONDING)

	ORTHODONTIC APPLIANCES SPECIALISTS (N=9)	PORCELAIN FABRICATORS (N=15)
I FIND MY JOB:		
NOT REPORTED	-	7
DULL	11	-
SO-SO	-	-
INTERESTING	89	93
MY JOB UTILIZES MY TALENTS:		
NOT REPORTED	-	-
NOT AT ALL TO VERY LITTLE	-	13
FAIRLY WELL TO VERY WELL	67	60
EXCELLENTLY TO PERFECTLY	33	27
MY JOB UTILIZES MY TRAINING:		
NOT REPORTED	-	-
NOT AT ALL TO VERY LITTLE	11	-
FAIRLY WELL TO VERY WELL	56	80
EXCELLENTLY TO PERFECTLY	34	20

### Summary

Overall, the jobs within the Dental Laboratory career ladder can be described as interrelated in terms of tasks and duties performed and consistent with the description presented by career ladder documents. Job satisfaction levels for all the job groups were high, indicating a career ladder with interesting work and where individuals perceive their talents and training as being well utilized.

## ANALYSIS OF DAFSC GROUPS

In conjunction with examining the job structure of the career ladder, DAFSC groups are also examined as part of each occupational analysis. This analysis allows for the identification of skill level differences and for the comparison of similar skill level personnel across the various career ladders. This data by DAFSC groups is used in the analysis of career ladder documents, such as the AFR 39-1 Specialty Descriptions and Specialty Training Standard (STS).

Jobs within the Dental Laboratory career ladder represent a homogeneous grouping encompassing duties and tasks specific to the fabrication and repair of dental prostheses. Table 10 depicts the relative percent of time spent by skill level groups on the various duties listed in the job inventory. There is clearly a differentiation between the 3- and 5-skill level technical specialists and the 7- and 9-skill level supervisors. As would be expected, those jobs requiring more supervision, management, or technical skill are performed by higher skill level personnel.

### Skill Level Groups

As a group, DAFSC 98230 apprentice dental laboratory specialists perform an average of 45 tasks of the 254 tasks in the job inventory. Sixty-seven percent of their time is spent performing general laboratory tasks and fabricating and repairing removable partial dentures (RPD's). As shown in Table 11, most of the group perform general laboratory tasks, with 16 of these tasks being performed by 65 percent or more of the 3-skill level respondents.

The 5-skill level dental laboratory specialists like the 3-skill level group spend a large percentage of their job time performing general laboratory tasks and fabricating RPD's (See Table 12). There appear to be no major differences in the types of jobs performed between 3- and 5-skill level dental laboratory specialists, although more of the 5-skill level personnel are performing those tasks related to the fabrication of crowns, inlays, and fixed partial dentures (See Table 13).

On the average, 5-skill level respondents spend 54 percent of their time in performing general lab tasks or working with RPD's much the same as was described for the 3-skill level group. Another 19 percent of their time is spent divided among the fabrication of crowns, inlays, fixed partial dentures and porcelain products.

At the 7-skill level, tasks performed shift from technical toward supervisory functions (See Table 10). However, DAFSC 89270 personnel still function as technicians. Table 14 lists those tasks performed by 68 percent or more of 7-skill level personnel. While 80 percent of this group responded that they were supervisors, but only 30 percent

of their time is spent in supervisory or management duties. Twenty-eight percent of their time is still spent performing general laboratory tasks and 20 percent of their time is spent in the fabrication of crowns, inlays, fixed partial dentures, and porcelain products. Many of these technical tasks are relatively difficult and require increased skill and experience. Therefore, 7-skill level dental laboratory personnel should be considered as a combination of experienced technician and supervisor. Table 15 reflects those tasks which best differentiate between 5- and 7-skill level personnel.

Dental laboratory superintendents are clearly the managers in this career ladder, spending 80 percent of their time performing supervisory and managerial tasks. Table 16 lists those tasks performed by 90 percent or more of 9-skill level personnel. Table 17 also depicts the differences between the 7-skill level technician supervisor and the 9-skill level laboratory manager. Although most of their time is spent supervising and managing, dental laboratory superintendents must be experienced in the technical tasks associated with the career ladder. The most common technical tasks they do perform are of high difficulty, involving the fabrication of crowns, inlays, fixed partial dentures, and porcelain products.



TABLE 10  
PERCENT TIME SPENT ON DUTIES BY DAFSC GROUPS

DUTIES	DAFSC 98230 (N=68)	DAFSC 98250 (N=324)	DAFSC 98270 (N=122)	DAFSC 98290 (N=11)
<u>SUPERVISORY AND MANAGEMENT FUNCTIONS</u>				
A ORGANIZING AND PLANNING	1	2	7	20
B DIRECTING AND IMPLEMENTING	1	4	11	26
C INSPECTING AND EVALUATING	*	2	6	24
D TRAINING	*	2	6	10
<u>ADMINISTRATIVE FUNCTIONS</u>				
E PERFORMING ADMINISTRATIVE AND SUPPLY TASKS	1	4	7	5
<u>TECHNICAL FUNCTIONS</u>				
F PERFORMING GENERAL LABORATORY TASKS	53	44	28	3
G FABRICATING AND REPAIRING COMPLETE DENTURES	9	9	6	1
H FABRICATING AND REPAIRING REMOVABLE PARTIAL DENTURES	14	10	6	1
I FABRICATING CROWNS, INLAYS, AND FIXED PARTIAL DENTURES	9	12	13	5
J FABRICATING PORCELAIN PRODUCTS	8	7	7	5
K FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	4	4	3	*
L FABRICATING SPECIAL PROSTHESES	*	*	*	-

\* INDICATES LESS THAN ONE PERCENT



TABLE 11

TASKS PERFORMED BY 55 PERCENT OR MORE OF DAFSC 98230 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING
F32 PERFORM GENERAL HOUSEKEEPING TASKS	88
F33 PERFORM PREVENTIVE MAINTENANCE ON DENTAL LABORATORY EQUIPMENT	87
F50 WEIGH OR MIX GYPSUM PRODUCTS	71
F37 PREPARE SLURRY WATER	68
F28 MOUNT CASTS WITH ARBITRARY MOUNTING TECHNIQUES	66
F25 KEY OR SCORE CASTS	65
F34 PERFORM SELECTIVE GRINDING PROCEDURES	63
F15 ELIMINATE POSITIVE STONE BUBBLES	63
F39 POUR AND TRIM MASTER CASTS	63
H2 ARTICULATE CASTS OF RPDs	62
F38 POUR AND TRIM DIAGNOSTIC CASTS	60
F22 FINAL FINISH OR POLISH ACRYLIC PRODUCTS	59
F44 SOAK CASTS IN SLURRY WATER	59
F42 SANDBLAST OR SHELLBLAST CASTINGS	57
F31 PAINT MOLDS WITH TINFOIL SUBSTITUTES	57
F1 ADAPT OR APPLY SELF CURING ACRYLICS	56
F43 SELECT ARTIFICIAL TEETH	56

TABLE 12

TASKS PERFORMED BY 68 PERCENT OR MORE OF DAFSC 98250 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING
F33 PERFORM PREVENTIVE MAINTENANCE ON DENTAL LABORATORY EQUIPMENT	90
F32 PERFORM GENERAL HOUSEKEEPING TASKS	89
F15 ELIMINATE POSITIVE STONE BUBBLES	80
F28 MOUNT CASTS WITH ARBITRARY MOUNTING TECHNIQUES	76
F38 POUR AND TRIM DIAGNOSTIC CASTS	75
F39 POUR AND TRIM MASTER CASTS	75
F37 PREPARE SLURRY WATER	74
F50 WEIGH OR MIX GYPSUM PRODUCTS	73
F34 PERFORM SELECTIVE GRINDING PROCEDURES	73
F1 ADAPT OR APPLY SELF CURING ACRYLICS	72
F25 KEY OR SCORE CASTS	71
F44 SOAK CASTS IN SLURRY WATER	70
F22 FINAL FINISH OR POLISH ACRYLIC PRODUCTS	68
F35 PREPARE IMPRESSIONS FOR POURING DIAGNOSTIC CASTS OR MASTER CASTS	68
F5 BOIL OUT WAX FROM MOLDS	68
F10 CURE ACRYLICS	68
F16 FABRICATE CUSTOM IMPRESSION TRAYS	68

TABLE 13

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 98230 AND 98250 PERSONNEL  
(PERCENT MEMBERS PERFORMING)

TASKS	DAFSC		DIFFERENCE
	98230	98250	
I25 WAX-UP, OR CARVE PATTERNS FOR INLAYS	12	49	-37
I15 LUBRICATE DIES FOR WAXING	28	61	-33
I24 WAX-UP OR CARVE PATTERNS FOR CROWNS	29	61	-32
F6 BURN OUT INVESTED WAX PATTERNS	28	60	-32
I7 CONSTRUCT STONE DIES	26	58	-32
I16 MOUNT OR OCCLUDE CASTS OF INLAYS, CROWNS, OR FIXED PARTIAL DENTURES	29	61	-31
I17 PICKLE GOLD ALLOYS USING PICKLING AGENTS	26	57	-29
I19 POUR MASTER CASTS WITH REMOVABLE DIES	31	60	-29
E4 MAINTAIN CUSTODIAN REQUEST/RECEIPT FORMS (AF FORM 519)	18	47	-29
I10 FINISH OR POLISH DENTAL ALLOYS FOR CROWNS, INLAYS, OR FIXED PARTIAL DENTURES	28	57	-29
E10 MAINTAIN RECORD OF DENTAL PRECIOUS METALS AND ALLOYS FORMS (AF FORM 520)	4	33	-29
F24 INVEST WAX PATTERNS	35	64	-29
I22 SOLDER BRIDGE COMPONENTS USING GAS-AIR TORCHES	15	43	-28
I9 ELIMINATE WAX FROM SOLDERING INDEX PRIOR TO SOLDERING	13	40	-27
A5 DETERMINE WORK PRIORITIES	12	37	-25

TABLE 14

TASKS PERFORMED BY 68 PERCENT OR MORE OF DAFSC 98270 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING
F33 PERFORM PREVENTIVE MAINTENANCE ON DENTAL LABORATORY EQUIPMENT	86
C18 WRITE APRs	81
B22 SUPERVISE DENTAL LAB SPECIALISTS (AFSC 98250)	79
F32 PERFORM GENERAL HOUSEKEEPING TASKS	78
A5 DETERMINE WORK PRIORITIES	78
B4 COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED PROBLEMS	75
E4 MAINTAIN DENTAL PROSTHETIC CASE RECORD FORMS (AF FORM 519)	70
A1 ACT AS TRAINING ADVISOR	70
F28 MOUNT CASTS WITH ARBITRARY MOUNTING TECHNIQUES	70
A12 PLAN OR SCHEDULE WORK ASSIGNMENTS	69
B5 DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	69
F34 PERFORM SELECTIVE GRINDING PROCEDURES	68
F25 KEY OR SCORE CASTS	68



TABLE 15

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 98250 AND 98270 PERSONNEL  
(PERCENT MEMBERS PERFORMING)

TASKS	DAFSC 98250	DAFSC 98270	DIFFERENCE
C18 WRITE APRs	22	81	-59
B22 SUPERVISE DENTAL LAB SPECIALISTS (AFSC 98250)	22	79	-57
B4 COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED PROBLEMS	21	75	-54
D7 COUNSEL TRAINEES ON TRAINING PROGRESS	17	63	-46
A12 PLAN OR SCHEDULE WORK ASSIGNMENTS	24	69	-45
A2 ASSIGN PERSONNEL TO DUTY POSITIONS	11	56	-45
A18 SCHEDULE LEAVES, PASSES, OR TDYs	10	54	-44
A9 ESTABLISH PERFORMANCE STANDARDS	14	55	-41
A1 ACT AS TRAINING ADVISOR	28	69	-41
A5 DETERMINE WORK PRIORITIES	37	78	-41
A4 DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	22	61	-39
D14 EVALUATE OJT TRAINEES	14	52	-38
B16 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	18	56	-38
B1 BRIEF INCOMING PERSONNEL	19	57	-38
C2 ENDORSE AIRMAN PERFORMANCE REPORTS (APRs)	9	46	-37

TABLE 16

TASKS PERFORMED BY 90 PERCENT OR MORE OF DAFSC 98290 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING
B23 SUPERVISE DENTAL LAB TECHNICIANS (AFSC 98270)	100
B16 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	100
C18 WRITE APRs	100
B4 COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED PROBLEMS	100
C1 ANALYZE WORK LOAD REQUIREMENTS	100
C15 EVALUATE WORK SCHEDULES	100
C7 EVALUATE COMPLIANCE WITH WORK STANDARDS	91
B5 DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	91
C2 ENDORSE AIRMAN PERFORMANCE REPORTS (APRs)	91
A2 ASSIGN PERSONNEL TO DUTY POSITIONS	91
B1 BRIEF INCOMING PERSONNEL	91
B19 PARTICIPATE IN STAFF MEETINGS	91
C11 EVALUATE MAINTENANCE OR USE OF WORKSPACE, EQUIPMENT, OR SUPPLIES	91

TABLE 17

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 98270 AND 98290 PERSONNEL  
(PERCENT MEMBERS PERFORMING)

TASKS	DAFSC 98270	DAFSC 98290	DIFFERENCE
F32 PERFORM GENERAL HOUSEKEEPING TASKS	78	9	+69
F33 PERFORM PREVENTIVE MAINTENANCE ON DENTAL LABORATORY EQUIPMENT	86	18	+68
F5 BOIL OUT WAX FROM MOLDS	63	0	+63
F35 PREPARE IMPRESSIONS FOR POURING DIAGNOSTIC CASTS OR MASTER CASTS	61	0	+61
F28 MOUNT CASTS WITH ARBITRARY MOUNTING TECHNIQUES	70	9	+61
F34 PERFORM SELECTIVE GRINDING PROCEDURES	68	9	+59
F1 ADAPT OR APPLY SELF CURING ACRYLICS	66	9	+57
F31 PAINT MOLDS WITH TINFOIL SUBSTITUTES	66	9	+57
C15 EVALUATE WORK SCHEDULES	33	100	-67
B23 SUPERVISE DENTAL LAB TECHNICIANS (AFSC 98270)	35	100	-65
A6 DEVELOP ORGANIZATIONAL CHARTS	11	73	-62
C19 WRITE CIVILIAN PERFORMANCE REPORTS	11	73	-62
C4 EVALUATE ADMINISTRATIVE FORMS, FILES, OR PROCEDURES	24	82	-58
C10 EVALUATE JOB DESCRIPTIONS	17	73	-56
C3 ENDORSE CIVILIAN PERSONNEL REPORTS	8	64	-56
A8 ESTABLISH ORGANIZATIONAL POLICIES, OFFICE INSTRUCTIONS (OIs), OR STANDING OPERATING PROCEDURES (SOPs)	28	82	-54

## ANALYSIS OF AFMS GROUPS

An analysis was also made comparing job differences among individuals grouped by time in service. Very similar conclusions to those for DAFSC groups were noted.

Table 18 reflects the relative percent time spent on duties by AFS 982X0 personnel grouped by enlistment period. Throughout all enlistment periods, airmen tend to move into positions of greater supervisory and management responsibility as they gain time in service. Generally, the longer individuals had in service, the less time they spent on technical tasks and duties. The one exception for this career ladder involves tasks related to fabricating crowns, inlays and fixed partial dentures. The amount of time spent performing in this duty remained relatively constant through all enlistment periods. However, this could be expected, since analysis of task difficulty revealed the duty to be one of the more difficult functions in the career ladder. With this exception, the percent of time spent on technical duties decreased while the percent of time spent on supervisory and management duties increased through the first five enlistment periods. The considerable increase in the time spent on supervisory and management duties after the 20 year TAFMS point is probably accounted for by the fact that 91 percent of all 9-skill level personnel fall in this group. Nine-skill level airmen are the true managers in this career ladder (as previously shown in Table 10).

In looking at the jobs performed by first enlistment airmen (1-48 months AFMS), it was found that 48 of the 224 tasks in the job inventory are performed by 50 percent or more of the survey respondents. The average number of tasks performed is 57, which illustrates the high homogeneity of the first job within this career ladder. Representative tasks for this group are displayed in Table 19. As for jobs performed by first enlistment personnel, it was shown in the CAREER LADDER STRUCTURE section that high percentages of first enlistment members were found in all job groups except the Dental Lab Managers. This AFMS group also uses or maintains a variety of equipment associated with the fabrication or repair of dental prostheses. Equipment used by 60 percent or more of first enlistment airmen is listed in Table 20.

As with DAFSC groups, AFMS groups are homogeneous in terms of tasks performed. There is some diversification of tasks performed as time in service increases, but on the average, a high degree of task commonality exists. The group with the highest number of common tasks is the 145-192 months AFMS group. Of a possible 224 tasks, 101 tasks are performed by 50 percent or more of this group.



TABLE 18

PERCENT TIME SPENT ON DUTIES BY 982X0 TAFMS GROUPS

DUTY	MONTHS TOTAL ACTIVE FEDERAL MILITARY SERVICE					
	1-48 (N=241)	49-96 (N=96)	97-144 (N=50)	145-192 (N=41)	193-240 (N=83)	241+ (N=21)
<u>SUPERVISORY AND MANAGEMENT FUNCTIONS</u>						
A ORGANIZING AND PLANNING	1	2	4	6	8	13
B DIRECTING AND IMPLEMENTING	2	5	8	7	12	19
C INSPECTING AND EVALUATING	1	2	5	5	7	14
D TRAINING	1	3	3	4	6	7
<u>ADMINISTRATIVE FUNCTIONS</u>						
E PERFORMING ADMINISTRATIVE AND SUPPLY TASKS	3	3	4	5	7	7
<u>TECHNICAL FUNCTIONS</u>						
F PERFORMING GENERAL LABORATORY TASKS	51	39	31	34	27	18
G FABRICATING AND REPAIRING COMPLETE DENTURES	10	8	6	9	6	5
H FABRICATING AND REPAIRING REMOVABLE PARTIAL DENTURES (RPDs)	12	10	7	6	6	3
I FABRICATING CROWNS, INLAYS, AND FIXED PARTIAL DENTURES	10	14	15	12	12	8
J FABRICATING PORCELAIN PRODUCTS	6	9	13	6	6	5
K FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	3	4	4	6	3	1
L FABRICATING SPECIAL PROSTHESES	*	1	*	*	*	*

\* INDICATES LESS THAN ONE PERCENT

TABLE 19

TASKS PERFORMED BY 63 PERCENT OR MORE OF 982X0 PERSONNEL WITH 1-48 MONTHS TAFMS

TASKS	PERCENT MEMBERS PERFORMING
F32 PERFORM GENERAL HOUSEKEEPING TASKS	90
F33 PERFORM PREVENTIVE MAINTENANCE ON DENTAL LABORATORY EQUIPMENT	88
F15 ELIMINATE POSITIVE STONE BUBBLES	75
F50 WEIGH OR MIX GYPSUM PRODUCTS	73
F37 PREPARE SLURRY WATER	72
F28 MOUNT CASTS WITH ARBITRARY MOUNTING TECHNIQUES	71
F39 POUR AND TRIM MASTER CASTS	69
F38 POUR AND TRIM DIAGNOSTIC CASTS	69
F34 PERFORM SELECTIVE GRINDING PRODUCTS	68
F25 KEY OR SCORE CASTS	68
F1 ADAPT OR APPLY SELF CURING ACRYLICS	66
F22 FINAL FINISH OR POLISH ACRYLIC PRODUCTS	66
F5 BOIL OUT WAX FROM MOLDS	65
H2 ARTICULATE CASTS OF PRDs	63
F44 SOAK CASTS IN SLURRY WATER	63
F16 FABRICATE CUSTOM IMPRESSION TRAYS	63
F31 PAINT MOLDS WITH TINFOIL SUBSTITUTES	63
G8 PREPARE CASTS OR MATRIX FOR DENTURE REPAIR	63

TABLE 20

EQUIPMENT OPERATED OR MAINTAINED BY 60 PERCENT OR MORE OF  
FIRST ENLISTMENT 982X0 PERSONNEL

<u>EQUIPMENT</u>	<u>PERCENT MEMBERS OPERATING OR MAINTAINING</u>
DENTAL LATHES, BENCH MOUNTED	89
MODEL TRIMMERS	88
DENTAL VIBRATORS	87
ULTRASONIC CLEANERS	87
BOILOUT TANKS	79
DENTAL ENGINES WITH HAND PIECE	78
SHELLBLAST MACHINES	77
ARTICULATORS, DENTAL NON-ANATOMICAL	76
DENTAL LATHES, FLOOR MOUNTED	74
DENTAL LATHES, HIGH SPEED	74
ARTICULATORS, DENTAL SEMI-ANATOMICAL	73
BURNOUT OVENS	68
ARTICULATORS, DENTAL ANATOMICAL	68
CURING UNITS	67
DENTAL PRESSES	66
WELL'S QUICK RELEASE CHUCKS	66
SANDBLAST MACHINES	60

## ANALYSIS OF TASK DIFFICULTY

From a listing of airmen identified for the AFS 982X0 job survey, incumbents holding 7- and 9-skill levels from various commands and locations were selected to rate task difficulty. Tasks were rated on a nine-point scale from extremely low to extremely high difficulty, with difficulty defined as the length of time it takes an average incumbent to learn to do the task. Interrater reliability (as assessed through components of variance of standard group means) among the 54 raters was .97. Ratings were adjusted (standardized) so that tasks of average difficulty have ratings of 5.00.

Of the 254 tasks in the job inventory, 131 were rated above average in difficulty. As shown in Table 21, only 10 of these tasks are performed by 50 percent or more of the survey respondents. These tasks are all technical in nature and are performed in both base and area dental labs. Of the ten tasks listed, seven are also performed by 50 percent or more of first enlistment personnel. While ten tasks may appear to be a rather small total of difficult tasks common across the career ladder, it should be pointed out that 45 percent of this AFS is composed of first enlistment personnel, and 53 percent of the survey sample have less than 5 years TAFMS. Because of this disproportionate number of lower grade airmen, the percentages of personnel performing the tasks requiring a high experience level such as fabricating porcelain products or special prostheses, and the tasks requiring an individual to be in a supervisory position such as directing, implementing, and training were quite low.

Of the 120 tasks rated as less than average in difficulty, 11 are performed by 65 percent or more of AFS 982X0 respondents. These tasks are listed in Table 21. There are 44 tasks total performed by 50 percent or more of the survey respondents and it is these tasks that form the common core of tasks for this career ladder. These tasks are technical rather than supervisory and large percentages of first enlistment airmen perform them. These tasks appear to be routine in nature and pertain almost exclusively to the duty of performing general laboratory tasks.



TABLE 21

TASKS RATED ABOVE AVERAGE IN DIFFICULTY WHICH ARE PERFORMED BY 50 PERCENT  
OR MORE OF DAFSC 982X0 RESPONDENTS

TASKS	DIFFICULTY INDEX	PERCENT TOTAL SAMPLE PERFORMING	PERCENT FIRST ENLISTMENT PERFORMING
I24 WAX-UP OR CARVE PATTERNS FOR CROWNS	6.66	58	46
G3 ARRANGE ARTIFICIAL TEETH IN WAX FOR BALANCED ECCENTRIC OCCLUSION	6.46	55	52
F34 PERFORM SELECTIVE GRINDING PROCEDURES	6.35	69	68
G4 ARRANGE ARTIFICIAL TEETH IN WAX FOR CENTRIC OCCLUSION	6.19	58	58
H6 CONSTRUCT WROUGHT WIRE CLASPS	5.88	57	54
F8 CHARACTERIZE SET UPS	5.80	53	49
I10 FINISH OR POLISH DENTAL ALLOYS FOR CROWNS, INLAYS, OR FIXED PARTIAL DENTURES	5.57	54	42
F43 SELECT ARTIFICIAL TEETH	5.42	63	62
H1 ARRANGE ARTIFICIAL TEETH FOR REMOVABLE PARTIAL DENTURES (RPDs)	5.38	60	60
F49 WAX-UP AND CONTOUR DENTURE BASES	5.09	54	53

TABLE 22

TASKS RATED BELOW AVERAGE IN DIFFICULTY WHICH ARE PERFORMED BY 65 PERCENT  
OR MORE OF DAFSC 982X0 RESPONDENTS

TASKS	DIFFICULTY INDEX	PERCENT TOTAL SAMPLE PERFORMING	PERCENT FIRST ENLISTMENT PERFORMING
F22 FINAL FINISH OR POLISH ACRYLIC PRODUCTS	4.81	65	66
F33 PERFORM PREVENTIVE MAINTENANCE ON DENTAL LABORATORY EQUIPMENT	4.36	87	88
F1 ADAPT OR APPLY SELF CURING ACRYLICS	4.21	67	66
F39 POUR AND TRIM MASTER CASTS	4.16	70	69
F28 MOUNT CASTS WITH ARBITRARY MOUNTING TECHNIQUES	3.87	72	71
F15 ELIMINATE POSITIVE STONE BUBBLES	3.60	73	75
F38 POUR AND TRIM DIAGNOSTIC CASTS	3.49	69	69
F50 WEIGH OR MIX GYPSUM PRODUCTS	3.24	69	73
F25 KEY OR SCORE CASTS	2.72	68	68
F32 PERFORM GENERAL HOUSEKEEPING TASKS	2.71	84	90
F37 PREPARE SLURRY WATER	2.56	67	72

## ANALYSIS OF CONUS/OVERSEAS DIFFERENCES

A comparison of tasks performed by 5-skill level incumbents assigned within the CONUS and those assigned overseas was made for the AFS 982X0 career ladder. With one exception, only minor differences in percent time spent on tasks and duties were noted.

Table 23 lists the percent time spent on each job inventory duty for the CONUS and overseas groups. Only in the area of fabricating and repairing orthodontic appliances were there any major differences. The overseas 5-skill level incumbents spent much more time in this area than did their CONUS counterparts. As pointed out in the career ladder structure analysis, this difference is probably the result of overseas dental laboratories having the added responsibility of supporting dependent dental care.

Table 24 shows the primary differences in tasks performed between the CONUS and overseas respondents. Except for the tasks related to orthodontics, there is little else that differentiates the groups. The overseas group averages 67 months time in the career field and 86 months TAFMS, while the CONUS group averages only 49 months in the career field and 68 months TAFMS. However, job satisfaction levels are comparatively high for both groups and the number of tasks performed on the job is very close with the overseas respondents averaging 73 tasks performed and the CONUS respondents performing an average of 70 tasks.

TABLE 23

PERCENT TIME SPENT ON DUTIES BY DAFSC 98250 CONUS AND OVERSEAS GROUPS

DUTY	DAFSC 98250 ASSIGNED CONUS (N=233)	DAFSC 98250 ASSIGNED OVERSEAS (N=89)
<u>SUPERVISORY AND MANAGEMENT FUNCTIONS</u>		
A ORGANIZING AND PLANNING	2	2
B DIRECTING AND IMPLEMENTING	4	4
C INSPECTING AND EVALUATING	2	2
D TRAINING	2	2
<u>ADMINISTRATIVE FUNCTIONS</u>		
E PERFORMING ADMINISTRATIVE AND SUPPLY TASKS	4	4
<u>TECHNICAL FUNCTIONS</u>		
F PERFORMING GENERAL LABORATORY TASKS	45	42
G FABRICATING AND REPAIRING COMPLETE DENTURES	10	8
H FABRICATING AND REPAIRING REMOVABLE PARTIAL DENTURES	10	10
I FABRICATING CROWNS, INLAYS, AND FIXED PARTIAL DENTURES	12	13
J FABRICATING PORCELAIN PRODUCTS	7	6
K FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	2	7
L FABRICATING SPECIAL PROSTHESES	*	*

\* INDICATES LESS THAN ONE PERCENT



TABLE 24

TASKS WHICH BEST DIFFERENTIATE BETWEEN CONUS AND OVERSEAS PERSONNEL  
HOLDING DAFSC 98250  
(PERCENT MEMBERS PERFORMING)

TASKS	CONUS (N=233)	OVERSEAS (N=89)	DIFFERENCE
K6 FABRICATE LINGUAL ARCHES	9	38	-29
K7 FABRICATE SPACE MAINTAINERS	25	49	-24
K12 REPAIR BROKEN ORTHODONTIC APPLIANCES	30	53	-23
K13 TRIM ORTHODONTIC DIAGNOSTIC CASTS	27	49	-22
K8 FINISH OR POLISH ORTHODONTIC DIAGNOSTIC CASTS	14	36	-22
K10 INSPECT ORTHODONTIC APPLIANCES	19	38	-19
K2 BEND WIRE FOR ORTHODONTIC APPLIANCES	35	53	-18
K3 DESIGN ORTHODONTIC APPLIANCES	15	28	-13
K9 FINISH OR POLISH ORTHODONTIC APPLIANCES	38	51	-13
K4 FABRICATE ACRYLIC ORTHODONTIC SPLINTS	31	44	-13
K1 ATTACH WIRES TO MODELS FOR ORTHODONTIC APPLIANCES	36	49	-13
B5 DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	30	43	-13
B21 SUPERVISE APPRENTICE DENTAL LAB SPECIALISTS (AFSC 98230)	33	17	+16

## COMPARISON OF AFR 39-1 SPECIALTY DESCRIPTIONS WITH SURVEY DATA

The AFR 39-1 specialty descriptions for AFSCs 98230/98250, 98270, and 98290 were compared against the survey data. All specialty descriptions appear to be complete, and accurately portray the duties and responsibilities of the personnel in this career ladder. All duties and responsibilities mentioned in the specialty descriptions could be matched to tasks in the job inventory, and sufficient numbers of survey respondents were found performing those functions to warrant their inclusion in the descriptions. No major duties or responsibilities have been omitted nor were any trends noted in the career ladder structure that would necessitate a change in the specialty descriptions in the near future.

## COMPARISON OF THE SPECIALTY TRAINING STANDARD (STS) WITH SURVEY RESULTS

A review of the current STS 982X0, dated 12 March 1975, was made for the 3-, 5-, and 7-skill levels. Each of the STS subparagraphs containing task knowledge or performance requirements were compared to the survey results. Subparagraphs containing only general information or subject knowledge proficiency level requirements were not evaluated.

Overall, the STS appears to be up to date and complete in providing general training requirements. Most STS subparagraphs were supported by survey data. However, consideration should be given to expanding STS paragraph 16, Specialized Prostheses, in the area of orthodontic appliances. Although few airmen are directly involved with the actual fabrication of orthodontic appliances, survey data indicate a considerable number are involved in the repair of these specialized prostheses. For example, 34 percent of the survey sample indicated they repair broken orthodontic appliances including 31 percent of 3-skill level airmen. Fifty-three percent of 5-skill level airmen overseas responded that they repair such appliances. Therefore, consideration should be given to including at least the repair of orthodontic appliances in a future STS revision.



## SUMMARY OF BACKGROUND INFORMATION

### Assignment To Career Ladder

Sixty-eight percent of the 982X0 survey respondents indicated they were initially assigned to the career ladder after completing resident technical training. Another 16 percent were retrainees who attended resident technical training and five percent entered the career ladder from basic training by successfully completing the bypass specialty test. Six percent responded that they entered the career ladder by other than normal classification methods.

### Relative Job Satisfaction

Table 25 displays the various percentages by AFMS groups of the responses to questions regarding job interest and perceived utilization of talents and training. In order to provide a better understanding of these figures, comparisons with individuals in medical AFSCs surveyed in 1977 are also provided by AFMS groups.

Eighty-eight percent of AFS 982X0 first enlistment respondents found their job interesting. This figure is considerably higher than the average reported by this enlistment group in 1977 medical studies. Also of note is the fact that only two percent of this group found the job to be dull. The high satisfaction level continues in the perceived utilization of talents and training with 90 percent of the group indicating a fairly well or better utilization of training. Again, these figures are considerably higher than the feelings registered by incumbents in the 1977 medical studies.

The job satisfaction levels for second enlistment personnel were also extremely high. Ninety-five percent of this group indicated they found their job interesting, with none of the respondents indicating that the job was dull. Ninety-seven percent indicated their talents were being utilized fairly well or better while 92 percent responded fairly well or better to utilization of training. All figures again are well above the 1977 medical data.

The job satisfaction levels for career airmen are more in line with the results of the comparative sample. Even though job interest levels are nearly identical, the level of utilization of talents and training for career dental laboratory personnel is higher than for the career medical personnel surveyed in 1977.

### Reenlistment Intentions

The expressed intentions toward reenlistment by AFS 982X0 survey respondents are displayed in Table 26. First enlistment personnel showed an intention to reenlist at a slightly higher rate than their



medical service contemporaries surveyed in 1977, while second enlistment personnel showed an intention to reenlist at a slightly lower rate than second enlistment respondents in the comparative sample. The reenlistment intentions of career airmen (97+ months) is considerably below that of the medical specialties studied in 1977. Telephone conversations with personnel in the field have indicated that many airmen are separating or retiring early because of good post service job opportunities. The high expressed job interest and perceived utilization of talents and training reported by respondents coupled with the low number of respondents (4 percent) with more than 20 years TAFMS, lend some credence to the belief that career airmen are departing the Air Force to pursue a dental laboratory career in the civilian community.

TABLE 25

EXPRESSION OF JOB INTEREST AND PERCEIVED UTILIZATION OF TALENTS AND TRAINING  
BY 982X0 TAFMS GROUPS  
(PERCENT RESPONDING)

	1-48 MONTHS TAFMS		49-96 MONTHS TAFMS		97+ MONTHS TAFMS	
	982X0	MEDICAL* AFSCs	982X0	MEDICAL* AFSCs	982X0	MEDICAL* AFSCs
<u>I FIND MY JOB</u>						
NO REPLY	2	-	1	-	5	-
EXTREMELY DULL TO FAIRLY DULL	2	15	-	14	6	8
SO-SO	8	15	4	11	6	9
FAIRLY INTERESTING TO EXTREMELY INTERESTING	88	70	95	75	83	83
<u>MY JOB UTILIZES MY TALENTS</u>						
NO REPLY	**	-	-	-	2	-
NOT AT ALL OR VERY LITTLE	10	30	3	23	10	12
FAIRLY WELL TO VERY WELL	67	62	62	66	55	66
EXCELLENTLY TO PERFECTLY	23	8	35	11	33	22
<u>MY JOB UTILIZES MY TRAINING</u>						
NO REPLY	**	-	1	-	2	-
NOT AT ALL OR VERY LITTLE	8	17	7	18	9	12
FAIRLY WELL TO VERY WELL	63	69	61	67	57	63
EXCELLENTLY TO PERFECTLY	29	14	31	15	32	25

\* BASED ON A SUMMARY OF OVER 1900 RESPONSES FROM MEDICAL AFSCs SURVEYED IN 1977.  
 \*\* INDICATES LESS THAN ONE PERCENT.

TABLE 26

**REENLISTMENT INTENTIONS OF AFS 982X0 PERSONNEL  
(PERCENT RESPONDING)**

<u>REENLISTMENT INTENTIONS</u>	<u>FIRST ENLISTMENT</u>	
	<u>982X0</u>	<u>MEDICAL AFSCs*</u>
NO	32	40
UNCERTAIN, PROBABLY NO	24	22
UNCERTAIN, PROBABLY YES	27	25
YES	15	13
NO REPLY	2	-

	<u>SECOND ENLISTMENT</u>	
	<u>982X0</u>	<u>MEDICAL AFSCs*</u>
NO	23	20
UNCERTAIN, PROBABLY NO	14	12
UNCERTAIN, PROBABLY YES	29	32
YES	33	36
NO REPLY	1	-

	<u>CAREER</u>	
	<u>982X0</u>	<u>MEDICAL AFSCs*</u>
NO	25	16
UNCERTAIN, PROBABLY NO	11	7
UNCERTAIN, PROBABLY YES	16	14
YES	44	63
NO REPLY	4	-

\* BASED ON A SUMMARY OF OVER 1,900 RESPONDENTS FROM MEDICAL AFSCs  
SURVEYED IN 1977.

## COMPARISON OF CURRENT SURVEY TO PREVIOUS SURVEY

The results of this survey were compared to those of Occupational Survey Report AFPT 90-982-195, Dental Laboratory Career Ladder, dated 1 April 1974. Sample sizes are comparable, with 501 respondents making up the previous sample and 532 respondents in the current sample.

Career ladder structure has remained relatively the same since the previous survey, as shown in Table 27. The previous job types and clusters of Complete Denture, Working Supervision, General Laboratory, and Partial Denture personnel could all be identified within the current Base Dental Laboratory Personnel cluster. However, as previously mentioned in the discussion of that group, differences between job types were not considered major enough to warrant separate reporting. Conversations with personnel in the field also revealed that the current removable partial dentures fabricators perform both the wax up and metal finishing of RPDs. Since the previous survey, the demand for RPDs has decreased because of improvements in dental materials and procedures. Consequently, fewer airmen are being assigned the duty of RPD fabrication. Fewer personnel assigned and less work to do has all but eliminated specialization among RPD fabricators. With a decrease in the use of RPDs has come an increase in the use of crowns, bridges, inlays, and fixed partial dentures. This would account for the increase in crown and bridge fabricators from the previous survey. The only group not found in the previous survey is that of the Porcelain Fabricators. With the increased use of fixed bridge work over RPDs has come an increased need for porcelain products. Based on the task data it appears that the porcelain fabricators have evolved as a specialization from the crown and bridge fabricators.

Both surveys revealed the expressed job interest and perceived utilization of talents and training of survey respondents to be quite high. Other background data such as average pay grade, DAFSC, TAFMS, and time in career field were similar between surveys.

Overall, the comparison revealed that the 982X0 career ladder has remained relatively unchanged in terms of career ladder structure and personnel makeup. In addition, there is no evidence to suggest this career is undergoing any major change or shift that would severely alter the primary job functions.



TABLE 27

COMPARISON OF FUNCTIONAL JOB STRUCTURE BETWEEN  
PREVIOUS AND CURRENT SURVEYS

PREVIOUS SURVEY  
CAREER LADDER STRUCTURE

Complete Denture Cluster (N=191)  
Working Supervision Cluster (N=103)  
General Lab Job Type (N=9)  
Partial Denture Job Type (N=6)

Orthodontic Job Type (N=8)

Crown and Bridge Cluster (N=56)

Metal Finishing Cluster (N=51)  
Wax Up Cluster (N=22)

Area Lab Supervision Cluster (N=33)

CURRENT SURVEY  
CAREER LADDER STRUCTURE

Base Dental Lab Personnel (N=307)

Orthodontic Appliances Specialists  
(N=9)

Crown and Bridge Fabricators (N=97)  
Porcelain Fabricators (N=15)

RPD Fabricators (N=44)

Dental Lab Managers (N=29)

## DISCUSSION

In the analysis of the survey data, it was found that the Dental Laboratory career ladder is comprised of highly satisfied incumbents whose primary job is the fabrication and repair of dental prostheses either at base dental labs or at area dental labs. In most jobs identified in the analysis, over 80 percent of the incumbents found their job interesting and felt that their job utilized their talents and training exceptionally well. This high degree of job satisfaction among career ladder members speaks well of the training provided incumbents, both resident and on-the-job training.

Overall, the 982X0 career ladder was found to be relatively stable as evidenced by the fact that only slight changes have occurred in the job structure since the last survey. Those changes that have occurred mainly involved lessening of demand for removable partial dentures fabrication with a corresponding increase in the use of crowns, bridges, inlays, and fixed partial dentures, and an increased need for porcelain products. Career ladder managers should carefully consider these changes when planning future training programs for career ladder personnel.